

## CASE STUDY

### Radnor Township School District Wayne, PA

#### TOPIC:

## Successfully Designing an IAQ Management Plan

The Radnor Township School District includes the entire community of St. Davids and part of the communities of Wayne, Rosemont, Bryn Mawr, Villanova, Ithan, Newtown Square, and Radnor. The school district, which serves a diverse multi-cultural population, includes three elementary schools, one middle school, one high school, and has approximately 3,000 students and 300 certified faculty and staff. Excessive moisture and ventilation issues in Radnor Township led to mold, temperature, and upper respiratory complaints in their middle school, causing them to implement the U.S. Environmental Protection Agency's (EPA) *Indoor Air Quality Tools for Schools (IAQ TFS)* Kit in 1997.

Radnor Township's five schools were constructed from the early 1900s to 2001. In 2001, the district completed construction of a new elementary school which incorporated "green" design elements such as fresh air intakes rising thirty eight feet above the ground, heat recovery and dehumidification units, and geothermal heating and cooling units. Design of the building brought together professionals from across the U.S. and Canada.

The district's school buildings are generally cement block with brick veneer, multi-story facilities, a style typical for the area. Heating, ventilation, and air conditioning (HVAC) units are located in classrooms and other common areas in the district's schools. Exhaust fans are located in storage closets and bathrooms, and the district's new elementary school has installed a new geothermal system and unique HVAC system.

Radnor Township's IAQ Team, or Safety Committee, consists of administrators, teachers, and support staff (i.e., custodians, bus drivers, parents, etc.). The Committee receives assistance, resources, and training from the American Society of Heating, Refrigeration,

and Air-Conditioning Engineers (ASHRAE), the Pennsylvania Association of School Business Officials (PASBO), and the Council of Educational Facility Planners International (CEFPI). The Committee holds monthly meetings and inspects the buildings once a month for physical safety hazards. During IAQ walkthroughs, which take place at least once a year, team members make visual observations and address staff comments and concerns. Concerns are then reviewed by Leo J. Bernabei, the Director of Operations, who tasks a specific individual to correct the problem or, if necessary, hires an outside contractor. Specific air monitoring issues are conducted annually by the contractor, Air Quality Sciences, Inc.

During an environmental clean up at Radnor Middle School, carpet was removed from areas susceptible to moisture and replaced with vinyl composite tile. Paint products were replaced with low volatile organic compounds (VOC) and odor-free products, and building products that were susceptible to moisture were removed and replaced with an appropriate moisture-resistant product. Other changes include the following: backflow prevention devices installed on all sewer lines; HEPA filters installed on all vacuum cleaners; calibration of outside air ducts; measurement to confirm the proper cubic feet per minute (CFM) level for air exchange; verify thermostats operate properly; and confirm proper humidity levels in all rooms. Currently, annual air quality testing is implemented throughout the school district as a preventative maintenance measure.

The District has recently developed a new cleaning policy program, which bans the use of cleaning products containing VOCs and heavy metals. Only water-based cleaners, including orange-based cleaners will be allowed. The cleaning policy program was implemented upon completion of the new elementary school, which was lauded for its environmental-friendly "green" design.



Through outstanding communication efforts, Radnor Township was able to televise their IAQ progress through Pennsylvania's Greenworks Television and through the television series American Environmental Review, hosted by Morley Safer. Presentations of their process and findings have been presented to CEFPI, the Sustainable Building Industry Council, the U.S. Green Building Council, PASBO, and many others.

The District has made IAQ a high priority. As a result of policies implemented by the Safety Committee, updated IAQ information is disseminated at monthly meetings to building principals, parents, and the School Board of Directors. Teachers, administrators, and maintenance and custodial staff members respond as partners in the solution rather than as adversaries. The most favorable outcome from this experience is the difference Radnor

Township sees in its buildings. They are cleaner, healthier places in which to work and learn. Even though Radnor Township realizes that IAQ issues still exist, they now have procedures with which to identify and remediate them quickly.

In 2001, Radnor Township won the Governor's Award for Environmental Excellence for Energy Efficiency for the newly constructed "green" design Radnor Elementary School. In October 2003, Radnor Township School District received an Excellence Award at the U.S. EPA's 4<sup>th</sup> Annual *Indoor Air Quality Tools for Schools* National Symposium in Washington, DC. This award signifies the school district's commitment to improving the indoor air quality in its schools and protecting the health and safety of students and staff.

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